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Grassland Systems | PGA Golf Management | Beef Systems Initiative

Winter 2020
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Workshop Focused on Improving Beef Production Systems

by Jay Parsons, Associate Professor, Agricultural Economics, University of Nebraska-Lincoln

The Center for Grassland Studies hosted the 2021 Beef Systems Initiative workshop on January 6, bringing together 72 people from a variety of backgrounds in a virtual format to discuss improving beef production systems in Nebraska. Workshop participants included Nebraska producers, CGS advisory board members, lenders, USDA personnel and University of Nebraska faculty, students, and staff.

The 2021 Beef Systems Initiative workshop had two primary goals. The first was to provide an update report and engage in conversation with collaborative stakeholders on Initiative progress. The second goal was to gather input from participants on how to address critical issues in forage-based beef production systems that were identified by stakeholders during the first three years of the Initiative.

The day began with a brief overview of the Beef Systems Initiative, a collaborative effort between UNL research and extension and USDA-ARS that is delivering on a 5-year plan funded by IANR Administration and academic units to develop and support implementation of beef production systems that optimize feed resource use, natural resource conservation, and producer success in Nebraska.

Zac Carlson and **Jim MacDonald** (Animal Science) provided a research update on the alternative cow-calf production systems project being conducted at the Eastern Nebraska Research and Extension Center near Mead. The project is a comparison between a traditional spring calving cow-calf production system utilizing perennial forage during the grazing season and an alternative fall calving production system utilizing a combination of drylot feeding and annual forage grazing as a substitute for perennial grass.



Mary Drewnoski, Daren Redfearn, and Tyler Burkey (Seward County) pondering the complexity of the Crop-Livestock Integrated Production Systems.

(Continued on Page 3)

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Note: Opinions expressed in this newsletter are those of the authors and do not necessarily represent the policy of the Center for Grassland Studies, the Institute of Agriculture and Natural Resources, or the University of Nebraska – Lincoln.

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Director's Column by Walt Schacht, Interim Director, Center for Grassland Studies



Faculty and staff of the Center for Grassland Studies (CGS) accomplished much and continued the growth of CGS programs in 2020. As we look towards a productive 2021, what does the new year hold in store for CGS? Below are some of the programs and activities that will be the focus of the Center.

The Principal Investigators of the Beef Systems Initiative held a successful workshop on January 6 (see front page of this newsletter). Based on considerable input from stakeholders and partners during the workshop's breakout sessions, the principal investigators of BSI plan to focus their research and extension programs on

options for late fall grazing, options for early spring grazing, and whole-farm system economics and risk.

The CGS Citizens Advisory Council is fully engaged in the outreach programs of the Center. Individual members of the Council are using their expertise in different aspects of grassland restoration and management, policy, and education in making presentations, writing newsletter articles, and being interviewed for podcast episodes that will be made available through the Center's website.

Further development of our website will include the addition of infographics, fact sheets, and videos focusing on grassland ecology and management. The outreach/education materials will be prepared by cooperating faculty members and staff of the Platte Basin Timelapse project and appear in Resource tags of our website.

The CGS staff is working towards strengthening its outreach and recruitment efforts with community college and high school teachers and advisors. The Center's recruitment team is planning a structured series of events and programs with community college and high school teachers that will increase students' exposure to grassland education and careers. Specifics include development of lesson plans and courses, delivery of online lectures and classroom activities, and joint field days.

We are looking towards increased student enrollment in both PGA Golf Management (PGAM) and Grassland Systems in 2021/22. PGAM will further develop two new courses (golf course design and architecture and building a sustainable coaching system) based on successful offerings during the winter session in

(Continued on Page 4)

Brad Goetsch Receives Omtvedt Innovation Award by Liz Husmann,

Center for Grassland Studies



Brad Goetsch, Assistant Professor of Practice in the PGA Golf Management program, is the 2020 recipient of the Omtvedt Innovation Award for Teaching. CASNR Dean **Tiffany Heng-Moss** describes why Goetsch was selected for this prestigious recognition:

“Brad teaches the majority of classes in the PGA Golf Management program. He is well-respected by his students and does an excellent job integrating application of theory in the concepts he teaches. Additionally, he integrates technologies to enhance his students’ learning. Engaged students result in increased motivation, enriched learning, and provide immediate and informative assessment of his instruction. Brad created Launch, the program’s own podcast channel, where he interviews recent graduates to provide a unique perspective for prospective students and their parents. Brad’s work and commitment to the education of students is commendable. His PGA graduates are well-prepared to enter the industry, where they often compete for the very best entry-level positions in the golf industry.”

Director of the PGM program, **Dann Husmann**, says of Brad, “He has planned and delivered on numerous events and activities that have greatly enriched the educational experiences of our students in PGA golf management in the classroom and in the field. His work and commitment to the education of our PGA Golf Management students is commendable. Brad is a huge asset for our program and an excellent choice for the 2020 Omtvedt Innovation Award for Teaching.”

The Omtvedt Innovation Award is made possible by Leone and the late Neal Harlan, great friends of the Institute of Agriculture and Natural Resources, in honor of Dr. Irv Omtvedt and his distinguished career at the University of Nebraska. The Harlans had the vision and foresight to realize the importance of recognizing and supporting outstanding and innovative work in the Institute. These awards recognize areas of strength and promise within the Institute, as well as innovation and excellence in teaching, research, extension and teamwork.

Beef Production System Workshop (Continued from Page 1)

Mitch Stephenson (Agronomy & Horticulture) provided a research update on grazing management strategies in the Nebraska Sandhills. **Mary Drewnoski** (Animal Science) and **Jay Parsons** (Agricultural Economics) provided an Extension update on interactions with the producer and lender focus groups associated with the Initiative. **Daren Redfearn** (Agronomy & Horticulture) and Jay Parsons provided the final update with a presentation titled Building Capacity that reviewed additional projects that have resulted from the Initiative and overviewed the graduate student cohort group working in the area of Crop-Livestock Integrated Production Systems (CLIPS students).

The final hour of the program was dedicated to gathering input on three important topics: (1) options for late fall grazing; (2) options for early spring grazing; and (3) whole farm system economics and risk. The input gathered will provide valuable information to inform current data gathering and analysis efforts as well as future grant funding proposals.

The Center for Grassland Studies is the administrative home for the Beef Systems Initiative. It is a concerted statewide research and extension effort engaging many faculty from University of Nebraska-Lincoln academic units, as well as other institutions of higher education, state, federal and private collaborators. The Initiative seeks to improve the utilization of rangeland, pastures, crop residues, annual forages, ethanol co-products, and cover crops to optimize Nebraska beef production in an economically and environmentally sustainable manner.

Scholarships and Fellowship Applications Now Open by Margo

McKendree, Center for Grassland Studies

The Center for Grassland Studies has several funds available to provide undergraduate and graduate students with support in pursuing degrees in grassland management and stewardship. The Center and our students are very fortunate to have donors passionate about the Nebraska grasslands and committed to the education of our future professionals and grassland stewards.

Scholarships are awarded to current students based on the following criteria: cumulative grade point average, financial need, and a resume of activities. Applications for incoming students (freshmen or transfer) are evaluated based on their academic history recorded in the University of Nebraska-Lincoln application database (primarily ACT score for freshmen and cumulative college GPA for transfer students).

Eligible students may also apply for Professional Development Scholarships to be considered for partial funding to attend the following: Nebraska Grazing Conference, Nebraska Range Short Course (offered even-numbered years only) and Nebraska Ranch Practicum.

Application and Deadline. To learn more and to access the online applications go to <https://grassland.unl.edu/grassland-systems/grazing-livestock-scholarships>. *The submission deadlines are March 15, with notification of awards made in April.*

Available Scholarships

- ❖ *Joseph O. Young Scholarship*
- ❖ *Dr. Kenneth C. Stout Grassland Studies Fund*
- ❖ *Nebraska Sandhills Task Force Scholarship*
- ❖ *Stock Seed Farms—Dr. Laurence C. Newell Scholarship*
- ❖ *Leu Foundation Scholarship*
- ❖ *Martin & Ruth Massengale Grassland Studies Scholarship*

Available Fellowship

- ❖ *Arthur W. Sampson Fellowship.* This fund supports graduate students with a special interest in pasture and/or range management in the state of Nebraska. Several one-year (July 1 through June 30) fellowships are available for graduate students in the Department of Agronomy and Horticulture, School of Biological Sciences and the School of Natural Resources or working with faculty from those units conducting research in Nebraska pasture and/or range management, including applied research (e.g. grazing management) and more basic research (e.g. nutrient dynamics) questions.

For more information about the Arthur W. Sampson Fellowship, or to see previously funded projects, go to <https://grassland.unl.edu/grassland-systems/arthur-sampson-fellowship>.

Director's Column (Continued from Page 2)

December 2020 and January 2021. Unfortunately, the 2021 Education Abroad offering in Scotland for PGAM students had to be postponed to 2022. Faculty associated with Grassland Systems will focus on strengthening capstone courses and the ranch management internship program.

The collaborative adaptive management (CAM) project at the Barta Brothers Ranch will be initiated with ENREC, the Center for Resilience on Agricultural Working Landscapes, Departments of Agronomy and Horticulture and Animal Science, and School of Natural Resources. Interaction with stakeholders and partners will be emphasized throughout the development and implementation of the CAM project in 2021. Efforts in attaining external grant funding have been successful.

The recently-created Dalbey Prairie, near Beatrice, was assigned to be managed by CGS in 2020. A field day celebrating Dalbey Prairie and UNL's commitment to grasslands is planned for summer or fall, 2021. CGS will continue to lead the Nine-Mile Prairie Advisory Council in developing plans and memorandums of understanding with partners in the Nine Mile Prairie environs.

The Nebraska Grazing Conference and Fall Seminar Series, the two principal outreach programs of CGS, will be held again in August and fall semester, respectively. We would like to hold both programs in-person and virtually.

Spring Prescribed Burning Season

by Ed Hubbs, Habitat and Private Lands Manager, Spring

Creek Prairie Audubon Center

Soon we will transition from snow and the cold winter months into brisk spring days when it is time to turn our focus to one of the most engaging management activities at Spring Creek Prairie Audubon Center, the spring prescribed burning season! You may notice columns of smoke rising from the prairie on a spring day. These fires are not a cause for alarm, but instead should impart awe and wonder at the fascinating dynamics of the prairie landscape.

Prescribed burning is more than just a tool to manipulate the prairie. It is an ecological process that is required for a healthy ecosystem. Prairie plants and animals evolved with periodic wildfires that raced across the countryside. Suppression of dangerous wildfires has left a gap in nature that cannot be replaced by any other process. In Nebraska, this gap or change in nature is usually seen as a shift in the types of plants that grow on a particular piece of land. Woody species, such as eastern redcedar, are stunted or completely killed by fire. Without fire on the landscape, these and other species may out-compete our preferred plant species, often to the detriment of wildlife and reducing economic benefits from grazing or haying.



Prescribed burn near Bennet, NE. Photo by E. Hubbs

Much like a doctor prescribes medication based on the patient's needs, landowners may also find that their property needs "medicine". In this case the medicine is fire. By following a plan or "prescription" we design when and how we will intentionally set a fire to benefit the prairie. A fire prescription includes too many details to cover here, but some of the most important are parameters for the weather conditions such as wind and humidity, that have a great influence on how the fire will behave. Prescribed fires are a source of disturbance that allows for the regeneration and growth of prairie plants. A hillside that is burned will quickly recover where there is adequate soil moisture. With old grass litter burned away, new, bright green shoots will poke out from the ash. The improved health of the plants is proven by the increased number of animals visiting the area. Benefits of fire move up the food chain as insects move in to eat the new shoots. Native and migratory birds capitalize on the plentiful insects that provide an important source of protein for growing chicks. Even deer and cattle prefer to graze on these high-quality shoots.

This spring when you see a column of smoke rising from the prairie, do not worry. Know that we are continuing our efforts to maintain this unique ecosystem in the way mother nature intended. For more information or to get involved with prescribed burning, contact **Ed Hubbs** at Spring Creek Prairie Audubon Center, ed.hubbs@audubon.org or (402) 797-2301.

Beth Hildebrant to Intern at Pinehurst Resort by Dann Husmann, Director, PGA Golf Management Program, University of Nebraska-Lincoln



All PGA golf management students are required to complete a minimum of 16-month paid internship during their undergraduate career at the University of Nebraska-Lincoln. Our students intern at a variety of facilities from coast to coast and even globally.

Beth Hildebrant (senior from Brookings, South Dakota) tells her story in her own words when she says, "I am insanely excited to announce that I will be interning at Pinehurst Resort next year! After losing the opportunity this year due to COVID, I reapplied and used my Minnehaha Country Club internship as a way to better prepare myself for Pinehurst next year. I will be interning in the same department that I was accepted into last year - tournament operations and Pinehurst Country Club's golf operations. I am incredibly thankful for my professors at UNL (**Dann Husmann** and **Brad**

Goetsch) for helping me prepare to be a Class A PGA Professional and for my parents (**Laura Diddle** and **Brian Hildebrant**) for always supporting me! If you're in NC next year let's hang out!"

If you are interested in continuing your education in PGA golf management at the University of Nebraska-Lincoln, please explore our program at <https://grassland.unl.edu/pgm>

Center Develops Online Resource Page

The expertise of affiliates of the Center for Grassland Studies includes a wide-range of topics affecting grasslands and turf, from prairie ecology and conservation, to livestock production and climate change. The Center has a commitment to interdisciplinary research and education, and our programs complement that of other University of Nebraska-Lincoln units, including the Department of Animal Science, Department of Agronomy and Horticulture, School of Natural Resources, Department of Agricultural Economics, and Center for Resilience in Working Agricultural Landscapes. The Center is also committed to initiating and expanding linkages in Nebraska and the Great Plains region with federal and state agencies, educational and research institutions, state colleges, community colleges, non-government organizations, practitioners, and others. The Resource page may be found at <https://grassland.unl.edu/resources>.

Each of the resource areas can also be found in the Center's news archive which features articles, videos, and podcasts with the most up-to-date information and research on all of these grassland topic areas, which include:

- ❖ Ag Economics
- ❖ Bioenergy
- ❖ Climate Change
- ❖ Conservation
- ❖ Wildlife Habitat
- ❖ Fire Ecology and Management
- ❖ Grazing Ecology and Management
- ❖ Invasive Species
- ❖ Legislation and Public Policy
- ❖ Pasture and Forage Crops
- ❖ Livestock Production on Grasslands
- ❖ Prairie Ecology and Management
- ❖ Turfgrass and Landscape Management

Congratulations to December 2020 Graduates!

The Center for Grassland Studies wishes the following graduates much success on their future endeavors.

- ❖ *Grazing Livestock Systems*: **Caden Billings** (Valentine, NE) and **Jacob Klingelhofer** (Amherst, NE).
- ❖ *PGA Golf Management*: **Joshua Baldus** (Fairmont, MN), **Brendan Bond** (Naperville, IL), **Aaron Hart** (Papillion, NE), **Corey Kruger** (Omaha, NE), **Kyle Murray** (Beatrice, NE), **Tanner Oelke** (Hickman, NE), **Jason Palmer** (Elm Creek, NE), and **Justin Wagner** (Dubuque, IA)

Evaluation of an Alternative Cow-Calf System by Zachary Carlson, Research

Project Coordinator, Ruminant Nutrition, University of Nebraska-Lincoln

Faculty in the Department of Animal Science at the University of Nebraska-Lincoln finished the second year of a five year trial comparing a partial confined, fall calving cowherd (alternative) and a late-spring calving cowherd (traditional) that utilizes perennial pastures and corn residue grazing. For the alternative herd, dry cows graze cornstalks from January to March. Cows are confined from March to October and limit fed an energy-dense diet. Cows were limit fed on average 16.2 lb. of dry matter, which consisted of 40% low-quality forage, 55% modified-wet distiller grains plus solubles, and 5% supplement (dry matter basis). Calving is from mid-July to mid-September. Pairs move from the feedlot in mid-October to graze fall-planted forage oats, which are planted following wheat harvest, from mid-October until January. Calves are weaned in January at an average of 167 days old.

The traditional herd grazes corn residue as a dry cow from October to March. The cows come out of the fields and are supplemented with grass hay until pastures are ready for grazing late-April to early-May. Calving season is from mid-April to mid-June. Pairs will graze perennial pasture from May to early-November. Calves are weaned in mid-October at an average of 167 days old.

In the first two years of the trial, we have observed no differences in conception rates, pregnancy loss, calving rates, or weaning rates (Table 1). Although there were no differences in weaning rates, there were health challenges for calves in the alternative system. In year one, six calves were lost to clostridial diseases. Alternative calves weaned 115 lb. lighter than traditional calves at the same age. This resulted in 126 lb. less beef produced per cow exposed to bulls in the alternative system. We continue to investigate the potential causes of lighter wean weights in the alternative system.

A partial budget was created for both systems, the cost to maintain a cow in the alternative system was approximately \$160 more than the traditional system. The additional cost for the alternative system is attributed to the costs to grow fall oats and diet costs while in confinement. Given our inputs, the most expensive feed costs were grazing fall oats (approximately \$2/day).

We followed calves from both systems through a growing and finishing phase. Calf intake was not different between alternative and traditional systems in the grower phase. However, alternative calves gained 0.38 lb./day more than traditional calves in the grower phase. At the beginning of the finishing phase, the alternative calves were 57 lb. lighter than the traditional calves. All finishing growth performance was not different between the two systems. Since alternative calves were lighter at the beginning of the finishing phase, they required 18 more days on feed.

In conclusion, there were no differences between systems relative to reproduction and weaning rates. The alternative system weaned lighter calves, which led to fewer pounds per cow exposed. The cost to confine in the alternative system was competitive relative to pasture rental rates in our analysis. The greatest expense for the alternative system, relative to feed, was growing and grazing fall oats. The alternative system was less profitable than the traditional system but did generate a positive net return to the operation in our analysis. The opportunity to expand or utilize resources (i.e. labor and time) at different times of the year may be an attractive option for producers interested in expanding or establishing a cow-calf herd.

Table 1. Reproductive and wean performance of an alternative or traditional cow-calf system

	Alterna- tive	Tradi- tional	SEM	P-value
Conception Rate, %	94.1	93.9	2.26	0.93
Pregnancy Loss, %	5.6	4.4	1.86	0.62
Calving, %	88.5	89.5	3.06	0.81
Weaning, %	82.5	86.9	3.08	0.31
Birth Weight, lb ¹	85	88	2.2	0.47
Wean BW, lb.	407	522	8.1	<0.01
lb. Weaned/Cow Exposed	333	459	13.9	<0.01

¹ Birth weights from year two only.

To learn more on considerations to limit feeding cows an energy-dense diet, see the article from the September edition of UNL's Beefwatch "Limit Feeding Cows Corn as an Alternative to Hay."



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Looking for Continuing Education Units?

The Society for Range Management (SRM) has approved continuing education units (CEUs) for a number of the Center's 2020 Fall Seminar Series presentations with accompanying podcast interviews. The approved presentations meet the SRM requirements related to rangeland science and natural resource topics. The CEU approval assists individuals with meeting professional development requirements within their agency or professional organizations of which they are members, while gaining valuable information on a variety of issues. Questions related to CEUs may be directed to the Society for Range Management at programs@rangelands.org.

The presentations, each worth one CEU, may be accessed at <https://grassland.unl.edu/grassland-systems/fall-seminars-leu-lectures>. Look for "CEU Approved" next to presentation titles.

- ❖ ***Rangeland Analysis Platform: A Web-based Monitoring Tool for Rangelands***, Oct. 5, 2020.
- ❖ ***Down the RaBET Hole: The Journey to Develop the Rangeland Brush Estimation Toolbox***, Nov. 6, 2020.
- ❖ ***Why Plant a Prairie? Restoration Versus Conservation***, Aug. 31, 2020.
- ❖ ***Precision Conservation: Increase farm Profitability While Conserving Soil, Water, and Wildlife***, Sept. 21, 2020.
- ❖ ***Tracking Cattle Grazing: GPS and Diet Selection***, Oct. 12, 2020.
- ❖ ***Using New Technology on the Ranch***, Oct. 26, 2020.
- ❖ ***Putting Monitoring into Practice: Strategies for Large-Scale Conservation***, Nov. 2, 2020.
- ❖ ***(Leu Lecture) Anthropocene: Should we Look to Aldo Leopold for George Jetson?***, Nov. 9, 2020.
- ❖ ***Rancher Decision-Making and Climate Risk Management***, Nov. 23, 2020.